



**NOAA Teacher at Sea  
Philip J. Hertzog  
Onboard NOAA Ship RAINIER  
July 24 - August 13, 2005**

**Log 13**

Day 13: August 6, 2005

Time: 1600 hours

Latitude: 55° 49.3' N

Longitude: 158° 51.5' W

Visibility: 10 nm

Wind Direction: 226°

Wind Speed: 14 kts

Sea Wave Height: 0 feet

Sea Water Temperature: 12.2° C

Sea Level Pressure: 1025.5 mb

Cloud Cover: 8, stratus, altostratus

**Science and Technology Log**

I spent the afternoon in the plot room behind the bridge. After collecting data on the launches, the hydrographic technicians need to process and make it usable before sending the information to map makers in Washington, D.C. This processing takes place in the plot room.

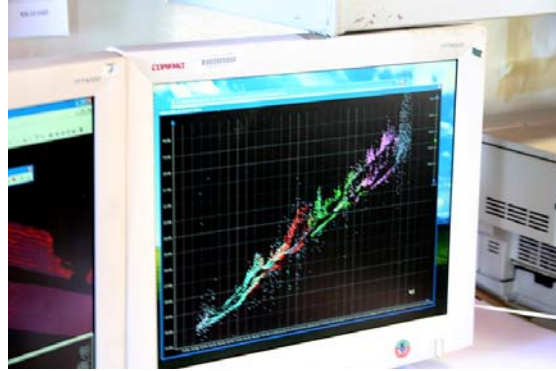
The plot room has a large table in the middle with eight work stations crowded around the outer edge of the room. Each work station has two computer screen monitors where the technician can pull up multiple windows. The room has a couple of portholes to provide light, though these can be shaded to make the monitors more visible as shown in the picture to the right.



I observed the Ensigns and survey technicians concentrating on their work. The plot room impressed me as the quietest location on the RAINIER with people clicking on their computer screens and checking their data for accuracy. Once in a while one of the technicians got up to ask another for clarification on a problem. The four people in the room all wore headphones to listen to CD or mp3 players.

The technicians processed data by first "cleaning" it up. The hydrographers put the sonar data up on the screen and looked for mistakes in the readings. Mistakes can occur by the

launch computer skipping measurements or missing a GPS satellite signal. The plot room computers also adjust for the movement of the launches in several directions caused by buffeting seas. The hydrographers highlight the incorrect data and click on it to remove it as demonstrated by Ensign Sam Greenaway in this photo:



After cleaning data, the crew corrected the sonar readings for sound velocity by using the CTD probe readings taken from the launches. As noted previously, the speed of sound in water is affected by conductivity (a measurement of salt content), temperature and density). The CTD data is used to correct the sea bottom depth readings obtained from sonar.

The technicians made one final correction to the sonar data by loading in tidal information to adjust for the height of the launch above mean lower low water. With the corrected sonar data, three-dimensional maps can now be generated and the hydrographer gets a picture of the ocean bottom over a wide area. Additional work will be done before the information is sent on to the chart makers off the ship.

After supper I went up to the plot room to get some photographs for this log entry. To my surprise, Ensigns filled every work station and I saw them checking on today's data. The Ensigns discussed with Lt. Ben Evans the strategy for tomorrow's mapping. What dedication! It's Saturday night, yet the work never stops for the hard working crew of the RAINIER. Too bad for them, I'm going fishing now!

### **Personal Log**

I had a very quiet day. The routine on a research vessel like the RAINIER is a mix of excitement and concentrated computer work. The crew averages about one day of cleaning and processing data for each day of collecting data on the launch. Though the computer work may seem tedious at first, think about the sense of accomplishment when you see your data become a three-D map of the ocean bottom and know that other people will use your work.

I hope my own students will recognize that hard work can pay off and provide a sense of accomplishment and purpose. The crew of the RAINIER has provided me with examples

to show my middle school students that they can balance exciting work with hard dedication to make a meaningful difference to society.

**Question of the Day**

Why must the hydrographers carefully check their data for mistakes? What can happen if a mistake is made on a nautical chart?